

II. *The Butterflies of the White Nile: a study in Geographical Distribution.* By G. B. LONGSTAFF, M.A., M.D., F.E.S.

[Read November 20th, 1912.]

PLATE II.

BIBLIOGRAPHY.

(Works dealing specially with the White Nile District are marked with an asterisk.)

1. AURIVILLIUS, CHR. *Rhopalocera Aethiopica*, Stockholm (1898).
- *2. AURIVILLIUS, CHR. Results of the Swedish Zoological Expedition to Egypt and the White Nile, 1901, under the direction of L. A. Jägerskiöld. Part I. *Lepidoptera*, pp. 1-9.
(The specimens were collected by J. Trägårdh.)
3. AURIVILLIUS, CHR. *Die Gross-schmetterlinge der Erde, von Dr. Adalbert Seitz. Fauna Africana* (1908—)
4. BINGHAM, C. T. *Fauna of British India: Butterflies*, vol. i, 1905; vol. ii, 1907.
- *5. BUTLER, A. G. A Revision of the Lepidopterous Genus *Teracolus*, with Descriptions of New Species. *Proc. Zool. Soc. Lond.*, 1876, pp. 126-165.
(This contains references to Consul Petherick's captures on the White Nile.)
6. BUTLER, A. G. On a Collection of *Lepidoptera* made by Major J. W. Yerbury at or near Aden (in 1883-1884). *Proc. Zool. Soc. Lond.*, 1884, pp. 478-503.
7. BUTLER, A. G. An account of two Collections of *Lepidoptera* recently received from Somaliland. *Proc. Zool. Soc. Lond.*, 1886, pp. 756-766.
(A small collection made by Major Yerbury in 1884; a larger collection made by Messrs. J. G. Thrupp, Lort-Phillips, and James, 1884-1885.)
8. BUTLER, A. G. On the Butterflies obtained in Arabia and Somaliland by Capt. Chas. G. Nurse and Col. J. W. Yerbury. *Proc. Zool. Soc. Lond.*, 1896, pp. 242-257.

9. BUTLER, A. G. A Revision of the Species of Butterflies belonging to the genus *Teracolus*, Swains. Ann. and Mag. of Nat. Hist., 6th series, vol. xx, 1897, pp. 385-399, 451-473, 495-507.
- *10. BUTLER, A. G. On some Butterflies from the White Nile collected by Capt. H. N. Dunn, of the Egyptian Army. Proc. Zool. Soc. Lond., 1901, p. 25.
(Capt. Dunn collected on the Bahr el-Zarâfa.)
11. DIXEY, F. A. On a Collection of Insects and Arachnids made in 1895 and 1897 by Mr. C. V. A. Peel, F.Z.S., in Somaliland, with Descriptions of New Species. Lepidoptera Rhopalocera. Proc. Zool. Soc. Lond., 1900, pp. 10-17.
12. DIXEY, F. A. On a Collection of Insects and Arachnids made by Mr. E. N. Bennett in Socotra, with Descriptions of New Species. Lepidoptera. Proc. Zool. Soc. Lond., 1898, pp. 372-383.
- *13. DIXEY, F. A. On Lepidoptera from the White Nile collected by Mr. W. L. S. Loat, F.Z.S.; together with further notes on Seasonal Dimorphism in Butterflies. Trans. Ent. Soc. Lond., 1903, pp. 141-163.
(I have had the great advantage of hearing Dr. Dixey's later views as to some of the more obscure species dealt with in these papers.)
14. ELTRINGHAM, H. A Monograph of the African Species of the Genus, *Acraea*, Fab., with a supplement on those of the Oriental Region. Trans. Ent. Soc. Lond., 1912, pp. 1-374.
15. KLUG, F. Symbolae Physicae (1829).
- *16. LONGSTAFF, G. B. Butterfly Hunting in Many Lands (1912).
(The account of my first visit to the White Nile will be found on pp. 415-423.)
17. MANDERS, N. Entomological Field Notes at Suakin. Ent. Month. Mag., xxii, pp. 277-279 (1886).
18. ROTHSCHILD, The Hon. N. CH. Lepidoptera from Egypt and the Soudan (1900, 1901). Nov. Zool., vol. viii, pp. 426-434 (1901).
19. ROTHSCHILD, The Hon. N. CH., and WARREN, W. Lepidoptera from the Soudan (1904). Nov. Zool., vol. xii, pp. 21-31 (1905).
20. SHARPE, Miss EMILY MARY BOWDLER. List of Lepidoptera collected in Somaliland by Mrs. E. Lort-

- Phillips. Proc. Zool. Soc. Lond., 1896, pp. 523-529.
21. SHARPE, Miss E. M. B. A List of the Lepidopterous Insects collected on the Red Sea, in the neighbourhood of Suakim, by Mr. Alfred J. Cholmley. Proc. Zool. Soc. Lond., 1897, pp. 775-777.
22. SHARPE, Miss E. M. B. A Monograph of *Teracolus* (1901).
23. TRIMEN, R. South African Butterflies, 3 vols. (1887-89).
- *24. TRIMEN, R. Manuscript Notes on Lepidoptera collected by Mr. F. C. Selous on the White Nile and in the Southern Bahr el-Ghazâl, between Feb. 17th and Apr. 10th, 1911.
(Kindly lent by the author.)
25. WALKER, F. A List of the Butterflies collected by J. H. Lord, Esq., in Egypt, along the African Shore of the Red Sea, and in Arabia, with descriptions of the Species new to Science. Entomologist, vol. v, pp. 48-57 (1870).
(It is said that the types were claimed by the then Khedive and placed by him in the museum attached to the School of Medicine at Cairo, where they perished owing to neglect. This paper promised to be interesting; but Walker's statement that such conspicuous butterflies as *Teracolus protomedia*, *T. eupompe* and *T. halimede* were taken by Lord in the Cairo district, convinces me that either he or Lord had muddled up the localities of the insects dealt with, since the butterflies named are not known to occur within several hundred miles of Cairo. The paper therefore is worthless for my purpose.)
26. YERBURY, J. W. The Butterflies of Aden and neighbourhood, with some Notes on their Habits. Journ. Bombay Nat. Hist. Soc., 1892.

The Area dealt with.

Strictly speaking the name White Nile should be confined to that part of the river (Bahr al-Abyad) between the mouth of the Blue Nile (Bahr al-Azrak) opposite to Omdurman and nearly two miles below Khartûm, and Lake Nô, where the Bahr al-Ghazâl joins the Bahr al-

Gebel. In practice, however, the name is usually held to include the Bahr al-Gebel from Gondokoro or Rejâf, the head of navigation [Lat. $4^{\circ} 45' N.$], down to Lake Nô, and this is the sense in which the name is here used. Moreover the Bahr al-Zarâfa, which is practically a loop of the Bahr al-Gebel, running more or less parallel to it for about $2\frac{1}{2}^{\circ}$ of latitude, and never more than forty miles distant, will here be treated as part of the same district. Khartûm again, though strictly speaking it stands upon the Blue Nile, is included for reasons of convenience, being the port of entry into the region.

On the other hand the Bahr al-Ghazâl, draining as it does the large area between the Bahr al-Gebel and the Congo basin, is *not* dealt with here. From what is known of its fauna it would appear to comprise more insects characteristic of Central and Southern Africa, than the fauna we are here considering.

The region thus defined lends itself to treatment as a unit, both from the fact that it is served by the convenient Government steamers and by the fact that it is throughout fairly uniform in character. At Gebel Auli and at Gebel Ên are small hills of igneous rock, while many similar hills occur at Lâdô and above, but with these exceptions the country is level.

Between Khartûm and Abba Island the country is for the most part bare and open. A few *Acacia* (commonly called *Mimosa*) trees or shrubs are here conspicuous by their rarity. Another small tree or shrub commonly met with on the desert is the "Nabbak," a species of Buckthorn, *Zizyphus mucronata*, Wild [Nat. Ord. *Rhamnaceae*],—a rather graceful tree whose white stems give it a Birch-like character, but it is defended by a peculiarly malicious scheme of thorns, which are arranged in pairs, one straight, the other curved. The *Acacias* extend right up to Gondokoro. Among the shrubs especially interesting to the Entomologist, are various *Capers* and other members of the order *Capparidaceae*. They are closely associated with *Pierinae*, whose larvae feed upon them. Another shrub, especially common on and near Abba Island, is *Salvadora persica*, Linn., also much frequented by *Pierines*; it has numerous insignificant green flowers. A remarkable plant with a wide range in the district is *Vitis* (*Cissus*) *quadrangularis*, Wallich [Nat. Ord. *Ampelidae*], a succulent jointed creeper, suggesting a *Cactus*. At the time of my

visit its snake-like branches were leafless and flowerless. Several days out of our twenty-four were spent in the Sadd.* Here the mass of the vegetation for many miles at a stretch was made up of the dark green *Papyrus* (*Cyperus*) *antiquorum* with its beautiful umbels six feet across, and of "ûm sîf," or "mother of wool"—*Vossia procera*—a reed-like plant, together with the more familiar *Phragmites communis*. Of smaller plants growing beneath the *Papyrus* at the water's edge a yellow composite and a blue-purple *Convolvulus* or *Ipomaea* were the commonest. The first "Candelabra" *Euphorbia*, striking trees nearly twenty feet high, were seen on the island of Hillet al-Nuwêr [Lat. 8° 13' N.]. At Bôr [Lat. 6° 13' N.], my attention was called to the singular *Kigelia aethiopica*, Decr., a tree belonging to the Nat. Ord. *Bignoniaceae*, which has flowerstalks many feet in length from which hang the large rich brown-purple flowers and cucumber-like fruits, the latter a foot long. At Rejâf [Lat. 4° 45' N.] a yet more tropical-looking plant was the *Adenium coetaneum*, Stapf. [Nat. Ord. *Apocynaceae*], with its absurdly thick stems, fleshy emarginate leaves, and clusters of showy bright-red waxy flowers. Palms were rarely seen. Doubtless this somewhat monotonous vegetation largely explains the restricted Butterfly Fauna.

The practice of burning the rank vegetation of the Sadd, must have a very destructive effect upon insect life. The numerous semi-calcined shells of such Gasteropods as *Burtoa* and *Limicolaria*—genera frequenting trees or bushes—which are seen in many localities, prove that these fires carry their destruction beyond the grassy areas on which antelopes, giraffes and elephants still roam even within sight of the steamer.

The circumstance that nearly every tree and shrub met with is more or less prickly tends greatly to protect butterflies from the collector's net. Near Ad-Duwêm I came across a grass even worse than the Indian "spear-grass," for its prickly awns at a touch converted the net into a tangled mass, which required some minutes to unravel. Fortunately its distribution appears to be restricted to a very small area.

Shortly, the district to be dealt with includes Khartûm [Lat. 15° 37' N., Long. 32° 31' E.] and the country adjacent to the banks of the White Nile to Lake Nô [Lat. 9° 30' N.];

* The correct spelling : pronounced Sudd.

the Bahr al-Zarâfa throughout its length; also the Bahr al-Gebel up to Gondokoro and Rejâf.

Gondokoro [Lat. $4^{\circ} 54' N.$, Long. $31^{\circ} 41' E.$], situated on the right or eastern bank of the Bahr al-Gebel, is the most northerly station in Uganda. Rejâf, about eight miles south of Gondokoro, but on the left bank, is in that part of the Anglo-Egyptian Sûdân which, under the name of the Lâdô Enclave, was leased to the late King of the Belgians.

The Bahr al-Gebel in the Sadd region, some forty miles south of Lake Nô, reaches its most westerly point in Long. $30^{\circ} 8' E.$ From these data it will be seen that the region treated of is included within $2\frac{1}{2}^{\circ}$ of longitude, but extends over 11° of latitude—say a strip of 650 miles by 140 miles—though the distance by river is said to be 1,128 miles. Probably most of the butterflies sent to Europe have been taken within a very few miles of the river banks.

Since the place-names given are for the most part those of small native villages, or of "wooding" stations, there is no reason to expect that they will be permanent in a country where even Government posts are from time to time moved for administrative convenience, or more often from the proved unhealthiness of their sites; since, moreover, whether permanent or not, many of these names are not to be found even in the best atlases, it has been thought well to give the approximate latitude of each locality. Of course the latitude is not of much service in the case of places situated on the part of the river running nearly due east from Lake Nô to Kôdôk (Fâshôda).

Entomologically this district is but little known, so, having visited it myself twice, in February 1909 and again in February 1912, it seemed worth while to gather together the stray notes of travellers and sportsmen, to form the basis of a local list. I have been confirmed in this resolve by the discovery that my captures would appear to exceed alike in numbers of species and specimens those of my predecessors. But it must not be forgotten that the district has not been systematically worked, and especially must it be kept in mind that little is known of the wet-season fauna.

Family NYMPHALIDAE.

Sub-family DANAINAE.

1. *Danaida chrysippus*, Linn.

The Sûdân is an interesting region in which to study this very widely distributed species, since all its forms are met with, often all together.

α. The typical, or *chrysippus* form. This varies much in the depth of the ground-colour, moreover a large number of the specimens met with in this part of Africa have the veins of the hind-wings more or less dusted with white scales.

Dunn took it on the Bahr al-Zarâfa.* Loat took four males near Kâkâ, also a number of males and one female at Gondokoro. Dr. Dixey notes that several of Loat's specimens had "a slight white powdering round the gland patch." The Swedes took it both at Khartûm and at Kâkâ.

In 1909 I took a male at Gebel Ên, another at Kosti, and a third on Abba Island. At Khartûm, where the species was common, somewhat more than one-fourth of all the specimens observed were of the *chrysippus* form. In 1912 though I saw a few *D. chrysippus* at Khartûm I did not pay much attention to them, but a typical female was captured at Kanîsa [Lat. 6° 50' N.] and two at Rejâf, my most southerly point. It may accordingly be said to occur throughout the White Nile region.

The wide distribution of *D. chrysippus* throughout Africa and the Oriental region is well known, but attention may be called to the curious fact that Dr. Dixey did not find a single typical example among Peel's twenty-two specimens from Somâliland. Two specimens taken by Bennett in Sokotra have the veins of the hind-wings white. On the other hand, there is no trace of such white on the hind-wings of any of my Egyptian specimens ranging from Cairo to Aswân. The specimens taken by the Rothschild party on the Atbara were typical.

β. Form *alcippus*, Cram., including *alcippoides*, Moore. Under this I include all individuals with more or less white hind-wings.

Taken by Capt. Dunn on the Bahr al-Zarâfa, also by

* So far as I can make out Capt. Dunn's insects must have been taken in about Latitude 9° N.

Loat near Kâkâ and at Gondokoro. The Swedes took it at Khartûm, also near Kâkâ.

In 1909 I met with it commonly at Khartûm, where I estimated that more than half the *chrysippus* were of this form: I also took a male of the extreme *alcippus* form at Ad-Duwêm.

In 1912 I took one at Khartûm, another on the battle-field of Kerreri (about nine miles N.W. of Khartûm), and saw others at both places. I also captured single individuals at Abba Island, Shambî and Gondokoro.

From these records it may be fairly said that the distribution of *alcippus* covers the whole White Nile district.

Rothschild does not record it from the Atbara. Though it is common at Port Sûdân and at Aden, no specimens were found in the Peel collection from Somâliland, nor in the Bennett collection from Sokotra.

γ. Form *dorippus*, Klug [called by some authors *klugii*, Butler]. This lacks the transverse white band across the fore-wing near the tip, but normally has the hind-wings, on the upper surface, of the ground-colour. Aurivillius (3. p. 72) considers this a distinct species, a view in which probably he now stands alone.

Capt. Dunn took it on the Bahr al-Zarâfa. Loat met with it both at Kâkâ and Gondokoro. It was taken by the Swedes at Khartûm. The Rothschild party took it on the Atbara, as well as at Khartûm.

Personally I did not come across this form in 1909, but in 1912 took a single example at Khartûm.

It is a common insect both at Port Sûdân, and at Aden. Cholmley met with it to the north of Suâkin, while Peel found it the dominant form in Somâliland.

δ. Form *albinus*, Lanzknecht [called by some authors *dorippus*, Klug]. This, which may be said to combine in one the two deviations from the type, in that while lacking the white bar on the fore-wings, it has the hind-wings more or less white, would appear to be by far the scarcest form of *chrysippus*. Aurivillius (3. p. 72) regards *albinus* as an aberration of *dorippus*.

Capt. Dunn found it on the Bahr al-Zarâfa. Loat took a specimen near Kâkâ and four at Gondokoro. In 1909 I took a single specimen at Khartûm.

It occurs at Port Sûdân, also at Aden. It seems fair to assume, though the data are imperfect, that *dorippus* and *albinus* occur throughout the White Nile district.

2. *Tirumala petiverana*, Doubleday and Hewitson.

This was taken by Dunn on the Bahr al-Zarâfa, but I did not meet with it myself, and I have no other record from the district.

It is found in Abyssinia and Somâliland, and has a wide range in tropical Africa from East to West.

Sub-family SATYRINAE.

3. *Ypthima asterope*, Klug. The types came from Syria and Arabia.

The sole record that I possess of this butterfly—the only White Nile Satyrine known to me—occurring within the area under consideration, is that of a single example being found upon our steamer near Kanîsa [Lat. 6° 50' N.] on February 17th, 1912.

Selous took a male in 1911 on the Southern Bahr al-Ghazâl. It is not uncommon at Port Sûdân, and Col. Yerbury found it in some numbers at Aden. Dr. Dixey and I took it in Natal and Rhodesia; it is indeed a common and widely distributed African species. The Hope collection contains specimens from British East Africa, Lake Nyassa, Somâliland, and Lagos.

Sub-family NYMPHALINAE.

4. *Pyrameis cardui*, Linn.

This cosmopolitan species was taken by Capt. Dunn on the Bahr al-Zarâfa, also by Loat—a single female at Kâkâ. The Swedes took two males at Ad-Duwêm.

Though in 1909 I found *cardui* common near the point of junction of the Blue and White Niles, and saw it at the same place in 1912, it is remarkable that I have no record of having even *seen* it on either of my voyages up the White Nile. It may reasonably be inferred that it is not very common in that district, at all events during the month of February.

The Rothschild party took one on the Atbara; Yerbury found it commonly at Aden; Peel did not take it in Somâliland, but Bennett found it "common everywhere" in Sokotra. Personally I have found it common enough in Algeria, Cairo, Aswân, Natal and Cape Colony.

5. *Precis cebrene*, Trimen.

Dunn took this species on the Bahr al-Zarâfa, and Loat took two near Kosti [Lat. 13° 10' N.].

In 1912 I distinctly saw this butterfly on a thorny bush at Ad-Duwêm [Lat. 14° N.], also near Kanîsa [Lat. 6° 50' N.].

Cholmley took a few at Ambaia Erba; Yerbury found it common at Aden; Grant in Sokotra, and Peel in Somâli-land; it occurs also in Abyssinia.

It is an abundant African species, being found throughout the whole of South Africa and at Lagos on the West Coast.

The closely allied *P. oenone*, Hübner, takes its place in the Oriental region.

6. *Precis clelia*, Cramer.

Taken by Dunn on the Bahr al-Zarâfa and by Loat at Gondokoro.

In 1912 I took single specimens at Hillet al-Nuwêr [Lat. 8° 13'], Gondoroko and Rejâf.

Peel took it in Somâliland; Yerbury took one specimen at Aden, while Bennett reported it as very common in the mountains of Sokotra.

It is found throughout Central and South Africa as well as on the West Coast.

7. *Precis boopis*, Trimen (= *madagascariensis*, Guenée).

This was taken by Dunn on the Bahr al-Zarâfa. In 1912 I took a single example at Mongalla [Lat. 5° 12' N.].

Though ranging over Central and South Africa this species is not so widely distributed as the two preceding.

8. *Hypolimnas misippus*, Linné.

Mr. H. H. King assured me that this interesting and widely-distributed species was not uncommon at Khartûm; it was also in a collection that he had received from the Bahr al-Ghazâl. Dunn took it on the Bahr al-Zarâfa. It is, however, quite certain that I did not see this very conspicuous insect during either of my visits to Khartûm, or the White Nile.

The Rothschild party did not see it, but Cholmley met with it at Ambaia Erba, and Yerbury found it commonly at Aden, noting that: "The females of this butterfly mimic all the forms of *chrysiippus*."

At Sallom Junction, on the railway between Port Sûdân and Khartûm, a native boy brought me a male *misippus* in his fingers. Some weeks later I found both sexes fairly common at Port Sûdân, where I took typical females as well as females of the form *inaria*, Cram. (mimicking the *dorippus* form of *chrysippus*). Specimens of both these forms had traces of white on the upper surface of the hind-wings.

It is notable that the Cairo collectors know of but two specimens having occurred in that district during many years; in fact, they look upon it as a great rarity.

This familiar butterfly ranges over all tropical and South Africa as well as India, Ceylon and the Malay Archipelago.

In two females I detected a slight treacly odour.

9. *Hamanumida daedalus*, Fabr.

This characteristic African butterfly is known to occur on the Bahr al-Ghazâl, where it has been taken by Selous and others, and I am practically certain that I saw a specimen on February 15th, 1912, at Mongalla [Lat. 5° 12' N.].

Col. Yerbury took a single example at Aden; it has been reported from Abyssinia and Somâliland. It is found throughout tropical Africa, but stops short of Cape Colony.

10. *Neptis agatha*, Cram.

Loat took two specimens at Gondokoro.

On February 12th, 1912, a short distance below Kîrô [Lat. 5° 22' N.] I had a clear unmistakable view from the steamer of a *Neptis* of the size of *agatha* skimming over the herbage at the water's edge.

This species has been taken at Shoa, in Abyssinia [*circa* Lat. 10° N.]—perhaps the northern limit of the genus in East Africa—and has a wide range in Central, East, West, and South Africa.

11. *Byblia ilithyia*, Drury.

Taken by Dunn on the Bahr al-Zarâfa. Loat took a female near Kâkâ [Lat. 10° 40' N.], where the Swedish expedition also took a female.

In 1912 I took in all five specimens, viz.—a female at Melût [Lat. 10° 27' N.], a male and two females at Tawfî-kîyâ [Lat. 9° 25' N.], and a female at Kanîsa [Lat. 6° 50' N.].

These records point to a northern limit on the White Nile somewhere about 11° N.

Yerbury found this species at Aden and Peel found it in Somâliland.

It occurs also in Abyssinia, East, West and South Africa, as well as in India and Ceylon.

In a male I detected a sweet aromatic scent, compared to that of scented tobacco; a female had a similar scent, but less strong; in another female the scent was compared to chocolate, in a third to that of *Teracolus protomedia*. (Compare Longstaff, 16. pp. 501, 502.)

12. *Byblia goetzius*, Herbst. This species includes *B. acheloia*, Wallengren, *B. castanea*, Butler, and *B. vulgaris*, Staudinger.

Capt. Dunn took it on the Bahr al-Zarâfa. In one or other of the above forms it is found in Aden, Abyssinia, Somâliland, East Africa, Nyassaland, Transvaal, Natal and Cape Colony; but its distribution is especially distinguished by a wider range than that of the preceding species on the West coast and a less wide range on the East.

In Sokotra it is replaced by the nearly allied *B. boydi*, Dixey.

The distribution of the two species has been discussed in great detail by Dr. Dixey (11. pp. 376-379).

13. *Atella phalantha*, Drury.

Capt. Dunn took this on the Bahr al-Zarâfa.

It has been taken in Abyssinia, and, I believe, on the Bahr al-Ghazâl.

The species is widely distributed in Africa south of the Sahara, it occurs in Madagascar and Mauritius, also in India, Burma, Ceylon, Malaya, China and Japan, but it is not in Col. Yerbury's Aden list.

Sub-family ACRAEINAE.

14. *Acraea acerata*, Hewitson, form *vinidia*, Hew.

Taken in abundance by Loat at Gondokoro, January 12th, 1902 [Lat. 4° 54' N.]. A solitary male was taken by the Swedes at Gebel Ên, February 18th, 1901 [Lat. 12° 37' N.].

In 1912 the engineer of our steamer took a male on board near Lâdô, February 13th, 1912 [Lat. 5° 5' N.].

Mr. Eltringham tells me that this species is found through practically the whole of Africa south of the Sahara.

15. *Acraea terpsichore*, Linné, form *rougeti*, Guérin.

I took a single specimen, February 12th, 1912, at Mongalla [Lat. 5° 12' N.].

Mr. Eltringham tells me that this species is even more widely distributed than the last, extending to the Islands.

16. *Acraea natalica*, Boisduval.

Taken by Capt. Dunn on the Bahr al-Zarâfa.

Widely distributed in South and East Africa: the nearest locality to the White Nile given by Mr. Eltringham (13. p. 192) is Kibwezi in British East Africa.

17. *Acraea encedon*, Linné.

Loat took a male at Gondokoro which was intermediate between the typical form and *A. दौरa*, Godman and Salvin. The Swedish expedition took a male of the form *dौरa* at Renk [Lat. 11° 45' N.], and Selous took three males at the same place, as well as two males at Tawfikîyâ [Lat. 9° 25' N.]; Mr. Trimen says these are all small and pale, and more or less inclining to the form *dौरa*.

In 1912 I took a male at Tawfikîyâ which approached the form *infuscata*, Staudinger, and another near Dûlêb Hill [Lat. 9° 22' N.] of the form *lycia*, Wallengren, with much white about it.

Thus it will be seen that this species, in several forms, ranges in the White Nile district over at least 7° of latitude.

Mr. Eltringham (13. p. 210) gives its distribution as from Sierra Leone to the East Coast and from the Cape to Upper Egypt, also to the Islands.

Its larva feeds on *Commelina*.

18. *Acraea abdera*, Hewitson (= *cepheus*, Linné).

Taken by Capt. Dunn on the Bahr al-Zarâfa.

Mr. Eltringham (13. p. 112) gives its range as including the Bahr al-Ghazâl, the Congo basin, Angola, Gold Coast and Gaboon.

Family LYCAENIDAE.

19. *Polyommatus baeticus*, Linné.

Taken by Dunn on the Bahr al-Zarâfa; by Loat near Kâkâ, and at Gondokoro; by Selous near Tawîla, and by the Swedish expedition at Khartûm, Ad-Duwêm, and Mohadan Zarâfa.

I found it in abundance at Khartûm in 1909, and also met with it at Ad-Duwêm. In 1912 I found it again at the last-named place, and also at Rejâf.

This, probably the most widely-distributed of all the "Blues," may be said to occur throughout our district, but it would not appear to be plentiful except at Khartûm. Rothschild speaks of it as "common in Egypt from Cairo to Khartûm." He also took it at Al-Nakhîla, on the Atbara River. I have myself taken a few specimens near Cairo and have seen it in some numbers at Aswân.

It is common at Aden and it has been recorded from Abyssinia and Somâliland, and has a wide range in South Africa, as well as in Europe, Asia and Australia.

20. *Lachnocnema bibulus*, Fabricius.

The Swedes took two very dwarfed males on Abba Island [Lat. 13° 22' N.].

This species has a wide distribution in South, Central, East, and West Africa, but I have no other record for the White Nile.

21. *Tarucus theophrastus*, Fabricius.

Loat met with this common and widely-distributed insect at Kâkâ, Mongalla and Gondokoro. The Swedes took it at Khartûm, Abba Island, Renk and Kâkâ.

In 1909, besides seeing it in abundance at Khartûm, I took it at Sôba (on the Blue Nile), at Ad-Duwêm and at Tawîla. In 1912 it was again abundant near Khartûm as well as near Sôba station, and on the battlefield of Kerreri. Up the White Nile it occurred at Ad-Duwêm (commonly), Dûlêb, Shambî (several), Tombê, Kîrô, Mongalla, Gondokoro and Rejâf, as well as on the Bahr al-Zarâfa.

Mr. Rothschild took it commonly at Al-Nakhîla and at Shendî, but found it rare at Khartûm. In 1909 I took one at Wâd Ben Nâga station, about twenty miles south of Shendî, as well as at Aswân and Luxor.

Shortly, it may be said that the range of this butterfly in North East Africa extends from Luxor to Gondokoro.

It is common at Aden, and Bennett took a specimen in Sokotra. Thrupp took it in Somâliland. It also occurs in Senegal.

According to Bingham (4. vol. ii, p. 419) it occurs in Persia and Balûchistân as well as throughout India and in Ceylon. This and the next species reach Europe.

22. *Tarucus telicanus*, Lang (= *plinius*, Fabr. = *pulcher*, Murray).

Loat took a male near Kâkâ [Lat. 10° 40' N.]. In 1912 I took a male at Hillet al-Nuwêr [Lat. 8° 13' N.] and in the same year took two specimens at Port Sûdân.

In 1909 I took one at Aswân, two at Luxor, and another as far north as Tel al-Amarna [Lat. 27° 37' N.]; but though ranging in the Nile Valley from that latitude down to 8° 13' N., it would not appear to be common at any of the places named.

Though the species is well known in Central and South Africa as well as at Aden, and is found in Northern India, I have no record from Somâliland or Sokotra.

23. *Castalius usemia*, Neave.

Mr. Neave's types of this neatly marked little butterfly were taken in the Victoria Nyanza district.

I was fortunate in securing a single example at the Rejâf wooding station [Lat. 4° 50' N.].

24. *Cupido cretosus*, Butler.

A female was brought home by the Swedish expedition from Renk [Lat. 11° 45' N.]; concerning this Aurivillius remarks: "This rare species was hitherto only recorded from Senegal and from Abyssinia." The variety *C. lacinatus*, Butler, has been met with in Somâliland.

25. *Catochrysops eleusis*, Demaison.

This little-known but very distinct "Blue" was taken by the Rothschild party at Aswân, Wâdi Halfa, and at Nakhila on the Atbara. I have myself met with it at Aswân, Abû Simbel, and Khartûm, but not south of the latter place. The Swedish expedition also found it at Khartûm. Its range in latitude would therefore appear

to be from 24° — $15\frac{1}{2}^{\circ}$ N. It is usually common where it occurs, and at Aswân it appeared to be attached to the pink-flowered *Lotus arabicus*, Linn.

26. *Catochrysops malathana*, Boisduval, var. *nilotica*, Aurivillius.

Two males were taken by the Swedes to the South of Kâkâ [Lat. $10^{\circ} 40'$ N.].

I have no other record in the Sûdân of this common Central and South African butterfly, which has also been reported from Lagos and Madagascar, as well as from Lahej in Southern Arabia.

27. *Zizera lysimon*, Hübner. This includes *Z. karsandra*, Moore, and, according to De Nicéville, also *Z. knysna*, Trimen.

In 1909 I took this fairly commonly at Khartûm, also a single example at Kosti [Lat. $13^{\circ} 10'$ N.] and another at Luxor.

In 1912 I took two on Abba Island, one at Kôdôk, also one at Tawfikîyâ [Lat. $9^{\circ} 25'$ N.], as well as one at Port Sûdân.

Rothschild took one at Nakhîla (f. *karsandra*); Bennett found it plentiful in Sokotra, and Yerbury took it at Aden (f. *knysna*).

This species is common in Central and South Africa, but I have no record of it on the White Nile south of $9^{\circ} 25'$ N.

According to Bingham (4. vol. ii, p. 358) it extends northwards to Southern Europe, Central and Western Asia; eastwards to India and Ceylon; southwards to Malaya and Australia.

28. *Chilades trochilus*, Freyer.

Loat took three at Kâkâ [Lat. $10^{\circ} 40'$ N.].

In 1909 I took one at Aswân, and another at Khartûm. In 1912 I took three at Port Sûdân. Cholmley took it north of Suâkin; Yerbury at Aden; also Peel in Somâliland.

It occurs also in the Victoria Nyanza district, British East Africa, Portuguese East Africa, Rhodesia, and also at Lagos. To these Bingham (4. vol. ii, p. 368) adds South Eastern Europe, Central Asia, India, Ceylon, Burma, Malaya, and Australia.

29. *Lycaenesthes amarah*, Guérin.

Taken by Capt. Dunn on the Bahr al-Zarâfa, and by Loat at Mongalla [Lat. 5° 12' N.].

In 1912 I took a male at Lûl [Lat. 9° 47' N.], also one of each sex at Kanîsa [Lat. 6° 50' N.] and a male at Gondokoro.

Its northern limit on the White Nile would appear, so far at least as the above records go, to be about 10° N.

Cholmley met with it north of Suâkin, and Yerbury at Aden, where it is common. It also occurs in Somâliland, in Central and East Africa and southwards down to Rhodesia and Natal.

30. *Lycaenesthes otacilia*, Trimen.

I took a male on January 8th, 1912, near Sôba station, on the Blue Nile, about ten miles above Khartûm, but have no other records for this part of Africa.

It is met with in Somâliland, British East Africa, Rhodesia, Natal and Cape Colony.

31. *Azanus jesous*, Guérin.

Bingham (4. vol. ii, p. 363) considers this as the same species as *gamra*, Lederer, and *crameri*, Moore: De Nicéville considers the two latter as synonyms of *sigillata*, Butler. Loat took a male at Mongalla [Lat. 5° 12' N.], but I have not myself met with this butterfly nearer to the White Nile than Port Sûdân. Mr. Peel took several in Somâliland. It occurs in the Victoria Nyanza district, in British East Africa, British Central Africa, Rhodesia and Natal. Bingham (4. vol. ii, p. 364) adds Arabia, (Yerbury gives *sigillata*), Balûchistân, a great part of India, Burma and Ceylon.

32. *Azanus ubaldus*, Cramer (*A. zena*, Moore; *A. thebana* Staudinger).

The Swedish expedition took it at Khartûm and on Abba Island [Lat. 13° 22' N.].

In 1909 I found it fairly common at Khartûm, and also took single specimens at Ad-Duwêm and Hillet Abbâs [Lat. 13° 7' N.] as well as at Amâda, in Nubia [Lat. 22° 45' N.].

In 1912 I again took it at Khartûm and Ad-Duwêm,

also at Melût [Lat. $10^{\circ} 27' N.$], Dûlêb [Lat. $9^{\circ} 22' N.$], Shambî [Lat. $7^{\circ} 0' N.$] and Mongalla [Lat. $5^{\circ} 12' N.$].

Mr. N. C. Rothschild took it near Shendî [Lat. $16^{\circ} 42' N.$] as well as at Nakhîla [Lat. $17^{\circ} 25' N.$], but did not find it common at either place.

Thus it would appear to range along the Nile Valley from the Tropic of Cancer, almost to Uganda.

Yerbury found it (*zena*) to be "generally distributed" at Aden; Peel took it (*thebana*) in Sokotra, while Col. Manders met with it at Suâkin (*zena*). It has also been taken in Somâliland and Natal.

Bingham (4. vol. ii, p. 363) gives Balûchistân, India, Ceylon and Burma.

33. *Deudorix livia*, Klug.

The type was taken "inter Kineh et Assuan Novembre," i. e. circa Lat. $25^{\circ} N.$

The Swedes took two females on Abba Island [Lat. $13^{\circ} 22' N.$].

Personally I know it as a native of Port Sûdân only. Prof. Poulton took a specimen near the Great Pyramid.

Col. Yerbury used to take it at Aden and remarks on the similarity of the female to that of the next species. Aurivilius gives Somâliland as a locality, also Nubia and British East Africa.

34. *Virachola antalus*, Hopffer.

I took three at Tawîla in 1909 [Lat. $13^{\circ} 10' N.$], and one at Port Sûdân in 1912.

It is found practically throughout tropical and South Africa as well as in Madagascar.

35. *Hypolycaena philippus*, Fabricius.

On February 22nd, 1912, I took one specimen at Tawîla [Lat. $13^{\circ} 16' N.$], but have no other White Nile records for this butterfly.

It occurs in Somâliland, in Uganda, and has a wide distribution in tropical Africa, occurring also in Natal.

Family PAPILIONIDAE.

Sub-family PIERINAE.

36. *Herpaenia eriphia*, Godart (= *melanarge*, Butler), f. *lacteipennis*, Butler; the extreme dry-season form is termed by Aurivillius *straminea*.

Found by Dunn on the Bahr al-Zarâfa. A very small example (1'' 3½''' = say 33 mm.) of the extreme "dry" form was taken by Selous at Tawîla [Lat. 13° 16' N.]. The Swedes took two males of the form *straminea* at Gebel Ên and Kâkâ respectively: the alar expanse of these was 31 mm. and 38 mm.

I took a very small example of each sex at Tawîla in 1909. In 1912 I took another at the same place, as well as three on Masran Island [Lat. 12° 45' N.] and three more at Renk [Lat. 11° 45' N.]: these were all small.

Klug's specimens of *Pontia tritogenia*, which is not distinguishable from *eriphia*, were taken at Ambukôl in July and August. There is a specimen in the Coll. Hope labelled "Nubia."

On the White Nile, however, the above records indicate a distribution limited by the latitudes 13° 16' and 10° 40' N.

This insect is found all along the eastern side of Africa, in Madagascar, throughout South Africa, and it has been recorded from Senegal.

Yerbury records *H. iterata*, Butler, for Aden: Aurivillius (3. p. 31) seems to doubt whether it is specifically distinct. This form is also recorded for Somâliland, as well as for German East Africa, and British East Africa.

37. *Belenois gidica*, Godart, including f. *abyssinica*, Lucas (Northern form), and f. *westwoodi*, Wallengren.

Capt. Dunn took the form *abyssinica* on the Bahr al-Zarâfa, and Loat took several of the same form near Kâkâ, as well as two at Gondokoro. The Swedes took a male of f. *westwoodi* at Gebel Ên [Lat. 12° 37' N.], and two males of the form *abyssinica* at Renk.

In 1912 I found it common at Gebel Ahmed Agha [Lat. 11° 0' N.], and took a few specimens at Kâkâ, Kanîsa, Mongalla, Lâdô, Gondokoro, and Rejâf.

It will be seen that I have no record of this common

South African "White," north of Lat. $12^{\circ} 37' N.$, *i. e.* three degrees above Khartûm.

This species is found in Abyssinia and throughout South and East Africa, and in one or two districts in West Africa.

A female had a faint scent. (Compare Longstaff, 16. p. 512.)

38. *Belenois severina*, Cramer.

Both Aurivillius and Dixey regard *leucogyne*, Butler, and *boguensis*, Felder, as races of *severina*, and transitional forms are common.

Dunn found typical specimens as well as *boguensis* on the Bahr al-Zarâfa. Loat took both forms at Mongalla [Lat. $5^{\circ} 12' N.$] and the typical form at Gondokoro.

In 1912 I met with the typical form at Gebel Ahmed Agha [Lat. $11^{\circ} 0' N.$], Dûlêb, Hillet al-Nuwêr, Shambî, Kanîsa, Tombê [Lat. $5^{\circ} 43' N.$], and Rejâf. The same year I took the form *boguensis* at Melût [Lat. $10^{\circ} 27'$], Dûlêb, Shambî and Kanîsa [Lat. $6^{\circ} 50' N.$].

These records give a very similar distribution for typical *severina* and for the f. *boguensis*; moreover the latter is common in the Victoria Nyanza country, and Selous took it on the Bahr al-Ghazâl.

B. severina is the "Common White" of South Africa, covering the whole continent south of the Sahara, passing over into Madagascar, while Col. Yerbury records it from Aden (under the name of *leucogyne*), but it does not enter the Oriental province.

39. *Belenois mesentina*, Cramer (= *lordaca*, Walker).

Taken by Dunn on the Bahr al-Zarâfa. It was found commonly by Loat at Kâkâ [Lat. $10^{\circ} 40' N.$], Mongalla [Lat. $5^{\circ} 12' N.$] and Gondokoro. The Swedes took it at Mohadan Zarâfa, and at Kâkâ; the specimens, more especially the males, being very small.

In 1909 I found it in abundance at Khartûm, and took three at Sôba. It was common at Ad-Duwêm and I took a solitary male at Tawîla. In 1912 I took several in the Khartûm district, including Kaderû and Kerreri. On the White Nile it occurred at Tawîla, Renk, Meshra Zarâfa, Kâkâ (common), Melût (common), Lûl, Tawfikîyâ, Dûlêb (common, but all the specimens taken were remarkably small), lower Bahr al-Zarâfa (common), Shambî, Kanîsa,

Bôr, Malêk, Tombê, Kîrô, Mongalla (females abundant, males scarce), Lâdô, Gondokoro and Rejâf—in fact, throughout the district.

Rothschild took several on the Atbara; it is common at Port Sûdân and at Aden [under the name of *lordaca*]. It also occurs in Somâliland. *B. mesentina* has by far the widest distribution of the genus, extending as it does over the greater part of Africa, Madagascar, Persia, Afghanistan, India and Ceylon.

Yerbury notes its attachment to a species of *Capparid* on which the larva feeds.

I found the males to have a slight scent, variously suggesting the adjectives "musky," "aromatic," "flowery."

40. *Pinacopteryx venata*, Butler.

[Plate II, figs. 1 ♂, 2 ♀, 3 u. s.]

The type of this little-known butterfly, a female, was captured by Petherick somewhere on the White Nile.* Another female was taken by Capt. H. W. Dunn on the Bahr al-Zarâfa in 1900.

On March 8th, 1902, Mr. Loat took a male at Gondokoro, which was described by Dixey (12. p. 141).

Meanwhile the authorities at the British Museum had identified this species with *P. doxo*, Godart, but Messrs. Trimen and Dixey, who have both carefully examined Godart's type at Edinburgh, are satisfied that this identification is wrong. Godart's insect appears to come nearest to *P. simana*, Hopffer.†

In February 1912 I was fortunate enough to capture twelve specimens of this distinct, though not very attractive "White," viz. a male and three females at Shambî [Lat. 7° 0' N.], a male and two females at Malêk [Lat. 6° 7' N.], and three males and two females at Gondokoro [Lat. 4° 54' N.].

Mr. Loat's specimens and my own were all found between Lat. 7° 0' N. and Lat. 4° 54' N., but Capt. Dunn's specimen must have come from further North, probably 8° 30' N., or even 9° N., and the precise locality of Petherick's specimen is also unknown.

* "Descriptions of a New Genus and six New Species of Pierinae," by A. G. Butler, F.L.S., etc. (There called *Ixias venatus*.) Trans. Ent. Soc. Lond., 1871, p. 169, Plate VII, fig. 7.

† Dixey, Proc. Ent. Soc. London (1912), pp. xlii, cxiii.

[*Synchloë glauconome*, Klug.

The type is said to have come from "Arabia deserta, in Monte Sinai ad *Erigeron denticulatum*."

Rothschild took it at Aswân and at Shendî [Lat. 16° 42' N.]. Cholmley found it north of Suâkin. Col. Yerbury reported it as common and generally distributed in the Aden district, the larva feeding upon *Cleome paradoxa* [Nat. Ord. *Capparidaceae*].

I have taken it near Cairo, and found it commonly at Port Sûdân, but have no record for Khartûm, or the White Nile.

Bingham states that it occurs in Persia, Balûchistân, the Pamirs and the Panjâb. The Hon. Walter Rothschild tells me that it occurs on the Sahara.

Aurivillius (l. p. 414) gives Somâliland on the authority of Miss E. M. Sharpe (20. p. 528). In the same work (p. 497) he indicates this as one of three Ethiopian species (the other two being *Acraea doubledayi*, Guér., and *Teracolus chrysonome*, Klug) which extend northward into the Palaeartic province. However, I should regard *glauconome* as a Palaeartic species which just enters the north of the Ethiopian province.

Three males yielded a distinct sweet scent like that of *Freesia*.]

41. *Calopieris eulimene*, Klug.

The types (both sexes) of this beautiful local and singular butterfly came from Ambukôl, a place in the Dongôla district, situated on the Nile just below Korti in Lat. 18° 4' N.

In 1909 I took a single specimen, a male, at Burri, the eastern suburb of Khartûm, also seven other males at Sôba on the Blue Nile about twelve miles above Khartûm. In 1912 I took a female a little to the north of Sôba station on the east bank of the Blue Nile, and, a week later, took three males and two females between that spot and Khartûm. These were for the most part in poor condition.

Mr. N. C. Rothschild took a single specimen at Shendî. Mr. A. J. Cholmley took five in 1896 at Ambaia Erba, north of Suâkin.

Mrs. Waterfield took several at Port Sûdân during the latter part of 1911 and the beginning of 1912, and I myself during the last days of February and first days of March

secured no less than eighteen males and nine females. My Port Sûdân specimens may be distinguished from those taken near Khartûm by the greater development of the black markings, and more especially by the orange veins on the undersides of the hind-wings being edged with black. I associate this greater strength of coloration [not present in Klug's types] with spring rains reported by Mrs. Waterfield as having fallen at Port Sûdân, but which did not occur at Khartûm.

The above are all the records that I have come across. Boisduval [Sp. Gén. der Lepid., vol. i, sp. 581] only quotes Klug.

I have little doubt that this butterfly is attached to the Desert Caper, *Capparis aphylla*, Roth., a leafless bush with bluish-green stems and inconspicuous flowers with red stamens.

Three males appeared to have a faint sweet scent, suggesting in one case Gorse.

42. *Teracolus calais*, Cramer (= *dynamene*, Klug, = *carnifer*, Butler).

Klug's types came from Ambukôl, and from "Arabia deserta."

Dunn took it on the Bahr al-Zarâfa.

In 1909 I took two at Tawîla, and in 1912 I captured in all twelve specimens at various points on the White Nile from Tawîla in Lat. 13° 16' N., up to Kanîsa in Lat. 6° 50' N., half my specimens coming from the latter place.

Col. Yerbury found it one of the commonest butterflies at Aden, where its larva feeds on the *Salvadora persica*, Linn. [Nat. Ord. *Salvadoraceae*].

It has a wide range in Africa—Abyssinia, Somâliland, Victoria Nyanza district, British East Africa, German East Africa, the Congo, Damaraland, Angola; in Asia it is found in Arabia, Persia, Sind and North-west India; but in Southern India it gives place to *T. amatus*, Fabricius.

43. *Teracolus phisadia*, Godart (= *arne*, Klug).

Klug recorded this from Ambukôl as well as from "Arabia deserta."

Capt. Dunn took it on the Bahr al-Zarâfa. Loat took five males and two females near Kâkâ. Selous took two males at Tawîla. The Swedes took four males and a

female on Abba Island [Lat. $13^{\circ} 22'$ N.] and at Renk [Lat. $11^{\circ} 45'$ N.].

In 1909 I took six males and six females at Tawila [Lat. $13^{\circ} 16'$ N.]. In 1912 I took in all fifteen males and sixteen females, the distribution of which was remarkable. A solitary female occurred at "the Mahdi's place" on Abba Island [Lat. $13^{\circ} 22'$ N.]. Thirteen specimens were brought home from Tawila, some half-a-dozen miles to the south of the last-named locality, where it was as common as on the occasion of my first visit. Fifteen were taken on Masran Island [Lat. $12^{\circ} 45'$ N.] and a solitary male at Mashra Zarâfa [Lat. $10^{\circ} 50'$ N.].

I have not been able to determine the precise latitude of Capt. Dunn's locality, but it must have been somewhere between $9^{\circ} 30'$ and $7^{\circ} 0'$ N., or considerably south of my localities, which all lie between $13^{\circ} 22'$ N. and $10^{\circ} 50'$ N., the great majority of the specimens occurring a little to the north or south of the 13th parallel.

Cholmley saw but one example, at Wâdi Gabait. Nurse and Yerbury found it abundant and variable at Aden; its larva feeding on *Salvadora persica*, Linn. It is also recorded from the Lebanon, Somâliland, Abyssinia, British East Africa and Senegal.

My impression is that of a very local butterfly, abundant where it occurs, somewhat sluggish in habit and easily caught.

44. *Teracolus castalis*, Staudinger.

The only record on the White Nile that I know of is my capture of two males at Kanîsa [Lat. $6^{\circ} 50'$ N.] on February 17th, 1912.

It occurs in British East Africa, both in the Victoria Nyanza Country and at Mombâsa, also in Somâliland.

45. *Teracolus chrysonome*, Klug.

The type came from Ambukôl. *T. helvolus*, Butler, is the dry-season form.

Rothschild found it common at Gebel Margel, near Shendî. I took a female near Mogran (on the Western, or White Nile, side of Khartûm) on February 8th, 1909. Cholmley found it very common in January and February about Halaib on the Red Sea. Peel took it in Somâliland (f. *helvolus*, Butl.).

Mrs. Waterfield and I found it in numbers, though local, in the scrub on the landward side of Port Sûdân, males preponderating largely. It did not turn up in the Park.

I have not come across any records from the White Nile district south of Khartûm, but it has a wide range further south, being found in Uganda, British East Africa, German East Africa, Portuguese East Africa, Congo, Rhodesia and Angola. Aurivillius (3. p. 51) adds Arabia and Northern Nigeria.

The sexes are distinct enough, but it is not so strikingly dimorphic as most species of the genus, nor does it seem to be variable.

46. *Teracolus vesta*, Reiche.

The type came from Abyssinia.

I took a solitary specimen at Rejâf [Lat. 4° 45' N.], on February 14th, 1912, and have no other records from this part of Africa although its range includes Mombâsa, Natal, Mashonaland, the Transvaal, Delagoa Bay, Damaraland and Angola.

47. *Teracolus amelia*, Lucas.

The type came from British East Africa.

Aurivillius (3. p. 52) says that this species, which extends from Senegal to Nubia, is very likely a local race of the preceding, but Dixey considers them quite distinct.

Loat took a solitary female, of the dry-season form, near Kâkâ; the Swedish expedition took another specimen, also a female, at the same place [Lat. 10° 40' N.].

I did not come across this species and have no other records from that part of the world, but there is a specimen in the Hope collection from Abyssinia (River Atbara).

48. *Teracolus protomeia*, Klug.

Klug says: "ex Arabia felici, Ambukohl: mensibus Julio et Augusto."

Petherick took both sexes on the White Nile. Dunn took it on the Bahr al-Zarâfa. Loat took five females near Kâkâ. Selous took two of each sex near Tawfikîyâ, one of the males being very small. The Swedish expedition took six males and three females all to the south of Kâkâ, the specimens being all of normal size and coloration.

In 1909 I took a solitary female at Khartûm, and subsequently ten males and one female at Ad-Duwêm, also one

of each sex at Tawîla. In 1912 it was quite common in gardens at Khartûm and I saw several at Kadarû, ten miles to the north. Moreover I either took, or saw, it at almost every stopping-place on the White Nile, right up to Rejâf.

The Rothschild party took eight at Nakhîla. Cholmley took it commonly north of Suâkin. I saw several at Port Sûdân, while Yerbury found it at Aden. Peel took a male at Sibî, West Somâliland, in 1895. It occurs also in Uganda, at Mombâsa, in German East Africa, and at Yola in Nigeria. It is thus evident that this large handsome swiftly-flying butterfly has a wide distribution.

Butler remarks that specimens of this species almost invariably arrive in a more or less broken condition. It has a strong flight and is, I should imagine, long lived.

The sexes are not remarkably different in appearance, and the insect does not appear to vary otherwise than in size.

In six males I have detected a slight scent, not easy to describe. The words "dusty," "stuffy," "musky," "peculiar," "like wood," and "very faint Freesia" have been applied to it. (Compare 16. p. 510.)

49. *Teracolus halimede*, Klug.

This includes Klug's *acaste*, from Ambukôl. Butler's *leo* is a form or race of this species, but no marked line can be drawn between it and the type; *coelestis*, Swinhoe, is not specifically distinct.

Klug's types came from Ambukôl, as well as from "Arabia felix and Arabia deserta." Consul Petherick sent it home from the White Nile. Loat took a male and two females near Kâkâ. Selous found it common at Tawîla and took a female opposite Renk; all his specimens would appear to have been of the form *leo*. The Swedes took one of each sex on Abba Island; these were assigned by Aurivillius to var. *acaste*, Klug.

In 1909 I took a number from Ad-Duwêm [Lat. 14° 0' N.] to Gebel Ên [Lat. 12° 37' N.].

In 1912 I took in all twenty-two (many of the form *leo*) on the White Nile, namely: on Abba Island five, at Tawîla nine, on Masran Island five, at Gebel Ên two, and at Kâkâ one [Lat. 10° 40' N.].

So far as my information goes its limits on the White Nile are Lat. 14° 0' N. and Lat. 10° 40' N., with headquarters at Tawîla [Lat. 13° 16' N.]. It is an insect not easily overlooked.

Cholmley took two of the form *leo* north of Suâkin, and Yerbury took it at Aden [given under the names *acaste*, Klug, and *coelestis*, Swinhoe]. The food-plant of the larva is *Cadaba glandulosa*.

It is a common butterfly at Port Sûdân and not as local as the next species. I found many females extremely worn, suggesting prolonged life.

This variable insect ranges over Abyssinia, Somâliland, British East Africa and German East Africa.

A male had a distinct musky odour. (Compare 16. p. 510.)

50. *Teracolus pleione*, Klug (= *miriam*, Felder).

The type came: "ex Arabia felici."

Petherick took it somewhere on the White Nile, and Loat took a female near Kâkâ [Lat. 10° 40' N.].

On February 5th, 1912, I captured two females at Kâkâ, both of the form with an orange flush, approaching the male colouring. I know of no other specimens from the White Nile.

At Port Sûdân this butterfly is extremely local; in certain spots in the Park it is very abundant, I took also a few specimens to the north of the harbour. The males had little or no orange flush.

Col. Yerbury took it in abundance at Aden, where he and Col. Nurse noted that it attached itself closely to a certain shrub, *Cadaba glandulosa* [Nat. Ord. *Capparidaceae*], on which the larva feeds. I can confirm this, though I did not identify the shrub. Late in the afternoon I have beaten the butterflies out of these shrubs in such numbers that on several occasions I have had five or six in my net at once.

Col. Yerbury tells me that most of his specimens were of a darker yellow than mine, also that in the Aden district about one out of every four females has the yellow flush.

This butterfly has also been found in Abyssinia.

A male had a scent like Freesia.

51. *Teracolus eris*, Klug.

The type came from Ambukôl.

The only northern record that I have of this widely-spread species is the capture of a solitary male at Masrân Island [Lat. 12° 45'] in 1912. I think, however, that Mrs. Waterfield has taken it at Port Sûdân.

Dr. Dixey and I took a few specimens in South Africa, at Ladysmith and the Victoria Falls, but it is a very rapid flyer, so that a small proportion only of those seen is actually secured.

Its area of distribution includes Abyssinia, Somâliland, the Victoria Nyanza, German East Africa, Rhodesia, Matabeleland, Natal and Angola.

52. *Teracolus hetaera*, Gerstaecker.

Mr. Loat took a female of this species near Kâkâ [Lat. 10° 40' N.], which was at first thought by Dr. Dixey (13. p. 146) to be a yellow form of the female of *T. phlegyas*. I have no other record for the White Nile.

Its range extends from the Victoria Nyanza to Mombâsa.

53. *Teracolus phlegyas*, Butler.

The synonymy of this species is puzzling. Butler called its dry-season form *jalone*, and the male of the same *coliagenes*. Again *T. imperator*, Butler, is indistinguishable from *phlegyas*. According to Trimen *phlegyas* is *ione*, Godart, in spite of the fact that Godart's description of *ione* agrees closely with the Natal insect. Trimen lays stress on the fact that Natal was not known to white men in Godart's day. [He died in 1823.] Dixey, however, considers the Natal insect to be *speciosus*, Wallengren [= *erone*, Angas], of which the dry-season form is *jobina*, Butler, the wet-season form *ione*, Godart.

The female is very variable and extremely different from the male. The types were taken by Petherick on the White Nile. Capt. Dunn met with it on the Bahr al-Zarâfa. Loat took a typical male near Kâkâ [Lat. 10° 40' N.]. Selous took two females and a male at Tawfikiyâ [Lat. 9° 25' N.]. The Swedes took a male on Abba Island [Lat. 13° 22' N.], also a female near Kâkâ.

In 1912 I took in all ten specimens, viz. two males at Kirô [Lat. 5° 22' N.], two males at Mongalla [Lat. 5° 12' N.], two males and a female at Gondokoro, and three males at Rejâf wooding station.

Thus *T. phlegyas*, while it ranges over 8½° of latitude along the White Nile, would appear to be commonest high up the river, above the Sadd.

Outside our limits this lovely butterfly is met with in Abyssinia, British East Africa, German East Africa, Rhodesia, Matabeleland, Natal, Damaraland and Senegal.

This species, and the remark is even more true of *T. eupompe*, is easily taken late in the afternoon when disturbed from the coarse grass in which the butterflies sleep; otherwise I quite agree with Messrs. Marshall * and Loat (13. p. 146) as to the wildness of their flight. It is remarkable that the purple-tip is rarely caught sight of during flight, and even the crimson-tip of *eupompe* is not nearly so conspicuous as might be supposed, but both butterflies have a peculiar bluish-white look when on the wing.

54. *Teracolus eupompe*, Klug.

This species is both sexually dimorphic and variable, and has consequently been split up by authors into, *e. g. pseudacaste*, Butler; *theopompe*, Felder, and *dedecora*, Felder. It would appear also to be conspecific with *miles*, Butler (26. p. 10).

Klug says: "Habitat in Arabia deserta, in Sinai monte, in Dongola et Habessinia." Capt. Dunn took it on the Bahr al-Zarâfa. Petherick took it on the White Nile. Loat took both sexes at Kâkâ and near Mongalla, as well as at Gondokoro. Selous took a male at Tawîla, and both sexes at Tawfikîyâ. The Swedish expedition took nine males and one female at Renk, Gebel Ên, and Kâkâ; these included the forms *theopompe*, Feld., and *dedecora*, Feld.

In 1909 I took two females at Gebel Ên; seven males and a female at Tawîla, and an aberrant female at "the Mahdi's place" on Abba Island.

In 1912 I met with it in considerable numbers, finding it at nearly every landing-place from Ad-Duwêm to Rejâf. It was very common at Gebel Ahmed Agha, Kanîsa and Mongalla, but might be described as abundant at Rejâf.

This species varies greatly in size. In a very few examples there is a purple glance or sheen on the crimson-tip. Many of the females were much worn. The great beauty of the males so fascinated me that I could not resist taking a considerable number, hence my collection gives the wrong impression that this species was commoner on the White Nile than, say, *T. evarne*, which is less attractive.

The Rothschild party took it commonly (*pseudacaste*) at Al-Nakhîla in 1904, but I have no record from Khar-tûm. Mr. Cholmley took it commonly north of Suâkin, and Peel found it in Somâliland. It is common enough at Port Sûdân; Col. Yerbury took two specimens at Aden

* Trans. Ent. Soc. Lond., 1902, pp. 354, 371.

(*miles*). It is found in Abyssinia, Somâliland (the commonest butterfly at Zaila), the Victorian Nyanza district, British East Africa, German East Africa and in Senegal.

In two males I detected a slight scent, in one described as "sweet," in the other as "stuffy."

55. *Teracolus achine*, Cramer.

This fine species is variable and accordingly has received several names. *T. simplex*, Sharpe, was described from a dry-season male from Durban; *antevippe*, Boisduval, and *helle*, Butler, are names given by the latter author to Petherick's specimens (both sexes) from the White Nile. Selous, in 1911, took two males of the extreme dry-season form at Tawfikîyâ [Lat. 9° 25' N.].

In 1912 I secured four males and two females on the White Nile, viz. single specimens at Dûlêb (not far from Tawfikîyâ), Hillet al-Nuwêr, Kanîsa and Kirô, and a pair at Rejâf. From these occurrences it may be gathered that on the White Nile *T. achine* is confined to localities south of Lat. 9° 30' N., and that it is not very common anywhere.

Cholmley took a dry-season male (*simplex*, Sharpe) north of Suâkin. Peel took a wet-season female in Somâliland. I took six males and four females at Port Sûdân.

It occurs in Rhodesia, Natal, and Cape Colony, and indeed probably over the whole of Africa south of the Sahara, if with Dr. Dixey we reckon the West African *T. carteri*, Butler, as a sub-species.

56. *Teracolus evippe*, Linné.

The form of this variable species usually met with on the White Nile is *epigone*, Felder, which is the same as *microcale*, Butler.

Petherick took a male somewhere on the White Nile. Loat took a male and six females at Mongalla.

I did not meet with this species in 1909, but in 1912 took twelve males and two females in localities ranging from Abba Island [Lat. 13° 22' N.] to Gondokoro. It was not common anywhere, but three out of my fourteen specimens were captured on the small patch of firm ground in the Sadd known as Hillet al-Nuwêr [Lat. 8° 13' N.].

Col. Yerbury met with it at Aden [*epigone*], but so far as I know it does not occur at Port Sûdân.

It occurs in the Victoria Nyanza district, Natal, Cape Colony, Sierra Leone, Lagos, South Nigeria, the Gambia district, the Cameroons and Angola.

The White Nile specimens are very small and many of them have the orange-tip paler than in specimens taken further south.

A male yielded a scent like *Freesia*.

[*Teracolus omphale*, Godart.

The Swedish expedition sent home two *Teracoli*, a male and a female, one taken at Renk, the other at Kâkâ, in February. Aurivillius calls them *T. theologone*, Boisduval, the winter form of *omphale*. He adds that both the specimens are small, the male measuring 33 mm. in expanse, the female only 28 mm.

I have not come across any other record of this species being taken on the White Nile, and did not myself meet with it anywhere in the Sûdân.

Odd specimens of the genus *Teracolus* are difficult to determine, and it seems reasonable to conjecture that the butterflies taken by the Swedes were not *omphale*, but perhaps the *epigone* form of *evippe*, or some other admittedly White Nile species, such as *achine*, or *evagore*.

Omphale occurs in Somâliland, though Peel did not come across it there; the two butterflies which Dr. Dixey (11. p. 15) so named, turn out, as he informs me, to be respectively an "intermediate" male of *T. evagore*, Klug, and a wet-season female of *T. achine*, Cramer.

It has also been taken in Abyssinia and almost all over Africa south of the Equator. The Hope collection contains two specimens from the Gambia.

In the absence of confirmatory evidence I exclude *T. omphale* from the White Nile list.]

57. *Teracolus दौरα*, Klug.

The synonymy of this species also is puzzling. Not only is it sexually dimorphic, but the ground-colour of the female may be either white or ochreous. Klug stated that the types came "ex Arabia felici."

Dr. Dixey has carefully studied long series of this butterfly and a closely allied form from Aden, which he is convinced is quite distinct. While admitting that Klug's male insect might well have come from Arabia, he asserts that no such

(ochreous) female as that figured in the *Symbolae Physicae* has been received from Arabia since Klug's time. Shortly, he thinks that Klug had before him two nearly allied species, an Arabian male and an African female.

Meanwhile Swinhoe described the Aden species as *yerburii*, and Dixey is strongly of opinion that it would be convenient for that name to stand, and the name *daira* to be confined to the African species. Probably Klug's type (female) of *daira* came from Ambukôl.

Petherick took this species on the White Nile. Dunn found it on the Bahr al-Zarâfa. Loat took it near Kâkâ and at Mongalla. Selous took two males at Tawîla and other two near Tawfikîyâ. The Swedish expedition sent home four males and four females, from Abba Island, Renk and Kâkâ.

In 1909 I took a male at Khartûm, six males and four females at Ad-Duwêm, a female at Hillet Abbâs, and three males and two females at Tawîla.

In 1912 I captured a male between Sôba and Khartûm, and met with it more or less commonly all the way up the White Nile to Rejâf. My specimens vary in colour and even more in size, but the dwarfs were not localised, *e. g.* at Malêk two males were taken, one of them described as "a dwarf with very little black," the other as "a fine large specimen with much black." One male was yellowish in ground-colour; in some females there is an orange-red flush before the tip, but in a large specimen this is quite absent, the tip being broadly black.

Mrs. Waterfield took a number at Port Sûdân, where I found one of each sex. Rothschild took it on the Atbara, also at Shendî. Cholmley took a female "below Shelal mountain."

It occurs in Abyssinia, Somâliland and British East Africa.

58. *Teracolus evagore*, Klug.

The type is said to have come "ex Arabia deserta." Dr. Dixey considers *T. nouna*, Lucas, *T. saxeus*, Swinhoe, *T. glycera*, Butler, *T. demagore*, Felder, and *T. heuglini*, Felder, to be all synonyms of this variable species, which has a wide distribution almost throughout Africa, and extending to S. Arabia.

Petherick took a male on the White Nile, also a female which Butler referred to *demagore*, Feld. Dunn took it on

the Bahr al-Zarâfa (*glycera*). Loat met with it (*glycera*) commonly near Kâkâ and at Mongalla, also four males at Gondokoro. The Swedes seem to have found it pretty common at Renk and Kâkâ (*heuglini*). Selous took both sexes at Tawfikîyâ (f. *heuglini*).

I did not come across it in 1909, but in 1912 found it from Gebel Ahmad Agha (a degree and a half south of the furthest point reached by me in 1909), at most of the places visited right up to Rejâf. It was distinctly commoner south of Shambî [Lat. 7° 0' N.], being especially abundant at Mongalla [Lat. 5° 12' N.]. It varied in size, and the female varied in the proportion of black and orange in the tip of the fore-wing.

Col. Yerbury took it at Aden (*nouna* and *saxeus*), also on the Somali coast. Under the name *nouna* it is well known as the Algerian *Teracolus*. Its larva feeds on a species of *Capparis*.

59. *Teracolus ephyia*, Klug.

[Plate II, fig. 4 ♂, fig. 5 ♀, fig. 6 ♂ u. s.]

The type (male) of this little-known butterfly came from Ambukôl. Aurivillius (1. p. 439) gives as other localities “? Angola, ? Damaraland : Rehabeth (Coll. Staud.),” but the same author writing later (3. p. 59) says : “Mit sicherheit nur aus Nubien bekannt.”

The Swedish expedition took two males at Khartûm.

In 1909 I took four males and a female at Khartûm, and also four males at Sôba.

In 1912 I took three males near Sôba station, on the opposite side of the Blue Nile to the ruins of the city. I also took three males and a female at Kaderû, opposite to the battlefield of Kerreri (Omdurman).

The Hon. N. C. Rothschild took a *Teracolus* near Shendî, where it was abundant, and believes that he saw the same species on the battlefield of Kerreri in March 1900.* This he named *T. liagore*, Klug (18. p. 21), but Dr. Jordan, who kindly re-examined the specimens at my suggestion, agrees that they should be referred to *ephyia*.

The British Museum has two specimens, males, labelled “Upper Egypt.”

* In my two flying visits to the battlefield, in 1909 and 1912, I did not take any *Teracoli*, though I have a recollection of having seen one.

This *Teracolus* has a more restricted distribution than any that I have met with; my specimens were all taken within a dozen miles of Khartûm—the most southerly at Sôba [Lat. 15° 32' N.]. Shendî is in Lat. 16° 42' N., and Ambukôl in Lat. 18° 4' N., so that the total range in latitude is but 2½°.

There is a specimen in the Hope collection taken by E. N. Bennett on the Upper Nile near the Pyramids of Meroë [Lat. 16° 55' N.], which are not many miles north of Shendî. There is, however, another specimen, which seems to be referable to the same species, that was taken by "S. L. and H. Hinde" in the Kenya district of British East Africa—about on the Equator.

Very closely allied to *ephyia*, but separable from it, is *T. lais*, Butl., of which Aurivillius (3. p. 5) gives the distribution as from Damaraland to Natal. Prof. E. B. Poulton, in 1905, took a specimen at Artesia station, British Bechuanaland [Lat. 24° S.]. *T. lais* might be termed the representative species of *T. ephyia* in South Africa.*

Mr. Hinde's specimen was taken 15½° south of my specimens of *ephyia*, and the extreme north of Damaraland is yet another 17° further south, so that whether it be referred to *ephyia* or to *lais*, it was found in an (at least apparently) extremely isolated position.

60. *Teracolus liagore*, Klug.

[Plate II, fig. 7 ♂, 8 ♀, 9 ♂ u. s.]

The type came from Ambukôl, though Kirby's Catalogue gives Arabia.

This is another little-known butterfly. Miss Sharpe [A Monograph of *Teracolus*, 1901, p. 128] considers *liagore* to be the dry-season form of *daira*, but on what grounds I know not. Dr. Dixey says it is impossible.

In 1909 I took a male at Ad-Duwêm [Lat. 14° 0' N.], the only White Nile record that I know of. In 1912 I took a female near Sôba station.

[For the Hon. N. C. Rothschild's captures see the preceding species.]

Mr. Cholmley took four males in the district to the north of Suâkin. Mrs. Waterfield takes it at Port Sûdân, where I myself took seven males and five females.

* Compare Dr. Dixey's remarks, Proc. Ent. Soc. London (1912), p. cxli.

Aurivillius (3. p. 59) confines this species to Nubia, but the British Museum has two males and a female from Muscat, South-east Arabia.

The range of this species, though decidedly restricted, is wider than that of the last, reaching the Red Sea Littoral on the north-east, and going $1\frac{1}{2}^{\circ}$ above Khartûm on the White Nile towards the south.

I have a fine large female which differs from the example figured in that the transverse dark bar on the fore-wing is reduced to two spots, whereas the marginal black spots on the hind-wing are much more pronounced.

61. *Teracolus evarne*, Klug.

The type came from Ambukôl.

Butler calls the dry-season form *citreus*, and the geographical race occurring in Upper Egypt, the White Nile and Abyssinia, *xanthevarne*.

This butterfly was taken by Petherick on the White Nile (*citreus* and *xanthevarne*). Dunn took it on the Bahr al-Zarâfa. It was found in some numbers by Loat at Mongalla and Gondokoro. Selous took two females, one opposite Renk, the other at Tawfikiyâ. Two males and six females brought home by the Swedish expedition from Renk, Gebel Ahmad Agha and Kâkâ were referred by Aurivillius to "var. hib. *citreus*, Butl."

A solitary male was taken by myself in 1909 at Gebel Ên [Lat. $12^{\circ} 37' N.$], but in 1912 I brought back twenty-eight specimens from various places on the White Nile, extending from Gebel Ahmad Agha in Lat. $11^{\circ} 0' N.$ right up to Gondokoro. It was by far the commonest at Shambî [Lat. $7^{\circ} 0' N.$]. As it is not a very attractive insect on the wing the number of specimens brought home is not an exact measure of its abundance, for one's attention is apt to be diverted by more conspicuous things.

Rothschild found it common on the Atbara, but it was not reported by either Cholmley or Yerbury. At Port Sûdân Mrs. Waterfield looks upon it as the commonest butterfly.

It occurs in Abyssinia, Somâliland (*philippsi*, Butler), the Victoria Nyanza district, British East Africa, German East Africa and Senegal.

I detected a scent in five males; it was distinct and sweet in character, in one case compared to Freesia, but in another described as "somewhat medicinal."

62. *Eronia cleodora*, Hübner.

The Sûdân form is var. *erxia*, Hewitson, which is more similar to the Natal form than to the race with very wide black borders which is found in the Mombâsa district.

Loat took a wet-season male at Mongalla [Lat. 5° 12' N.]. Selous took a small wet-season male near Tawfikiyâ [Lat. 9° 25' N.]. The Swedes took a small (51 mm.) male as far north as Gebel Ên [Lat. 12° 37' N.].

In 1912 I took two males at Renk [Lat. 11° 45' N.], and saw another specimen at Kirô [Lat. 5° 22' N.].

This handsome insect ranges over the whole of the Eastern side of Central and Southern Africa, and it also occurs in Angola.

63. *Eronia leda*, Boisduval.

In 1912 I secured a specimen of this very swift butterfly on the tiny island in the Sadd known as Hillet al-Nuwêr [Lat. 8° 13' N.], and saw others at Bôr [Lat. 6° 13' N.] and at Kirô [Lat. 5° 22' N.].

It would appear that this conspicuous South African insect does not get further down the White Nile than the Sadd.

This species has almost the same but not quite as wide a range over the continent as the preceding.

64. *Leuceronia buquetii*, Boisduval.

Loat took a female at Gondokoro. Selous took a male at Tawîla.

In 1909 I took a female at Tawîla, and in 1912 took six specimens in all, viz. two males at Tawîla, two males at Masran Island, a female at Kâkâ wooding station, and a female at Malêk [Lat. 6° 7' N.].

Its northern limit, according to these records, is Tawîla [Lat. 13° 16' N.], whence came four out of the total of nine specimens.

Col. Yerbury took it at Aden [form *arabica*, Hopff.]; Thrupp took the same form in Somâliland.

It is found over nearly all Central and South Africa; it also occurs in Sierra Leone and Madagascar.

I suspected a faint sweet scent in a male specimen, and noted a slight "scarcely agreeable" scent in another.

65. *Catopsilia florella*, Fabricius.

Dunn took this on the Bahr al-Zarâfa. The Swedes took a solitary male to the south of Kâkâ.

It was common during my stay at Khartûm in 1909, less so in 1912. Though I did not myself take this butterfly on the White Nile above Khartûm, it is very possible that I may have seen it.

Rothschild mentions it as common round Khartûm, and also as seen at Shendî. Cholmley took several north of Suâkin. Mrs. Waterfield found it common enough at Port Sûdân, though I did not myself see it there. Col. Yerbury took it freely at Aden. Peel found it abundant in Somâliland, and it extends even to Sokotra, where Bennett noted of it: "Flight strong," a fact that no one acquainted with the insect will dispute.

It ranges over Arabia, the whole of Africa south of the Sahara, and occurs in Madagascar and the Mascarenes.

At Khartûm I repeatedly saw this butterfly settle upon *Cassia obovata*, Callad., a dwarf shrub with yellow flowers that grows commonly on the sand in the outskirts of the city. Col. Nurse says that its larva feeds upon species of *Cassia*.

The strong luscious sweet scent of the males, noticed by me in South Africa, was confirmed.

66. *Terias senegalensis*, Boisduval.

Butler considered his *chalconiaeta* to be an insular race of this species.*

Found by Dunn on the Bahr al-Zarâfa. Loat took three males and a female at Gondokoro; the males were "dry," the female "intermediate."

In 1912 I took a single female, of the dry-season form, and saw another specimen, at Masran Island [Lat. 12° 45' N.]. Perhaps that may be taken as about the extreme northern limit of this butterfly, which is found throughout Africa south of the Sahâra, in Madagascar, and in Southern Arabia.

Yerbury took the form *chalconiaeta* at Aden.

67. *Terias brigitta*, Cramer.

Taken by Dunn on the Bahr al-Zarâfa. Loat took one of each sex at Gondokoro in January 1902; the male was

* Ann. Mag. Nat. Hist., Ser. 7, vol. i (1898), p. 67.

distinctly of the wet-season form, the female "wet" or "intermediate."

In 1912 I took a male at Kîrô, another at Lâdô, also a male and two females at Gondokoro.

As butterflies of the genus *Terias* are quite easily seen when on the wing, it might appear allowable to conjecture that *brigitta* does not extend far north of Lake Nô [Lat. 9° 30' N.], but the fact that specimens of the preceding species turned up no less than three degrees north of that place makes one cautious.

T. brigitta is found in Abyssinia, Somâliland and throughout tropical and South Africa.

68. *Colias hyale*, auctorum, f. *marnoana*, Rogenh.

In 1909 I found this butterfly almost abundant in the beanfields at the junction of the Blue and White Nile, just below Khartûm, near a village called Mogran.

During my visit in 1912 I did not work that exact locality, but I netted two males at the edge of a large cottonfield at Kadarû, opposite to Kerreri, and a few miles to the north of Khartûm.

Peel took a female in Somâliland in 1897. It is fairly common at Port Sûdân, and it occurs in Abyssinia, but Col. Yerbury tells me that the genus has no representative at Aden.

C. hyale is very widely distributed over the Palaearctic region.

Sub-family *PAPILIONINAE*.

69. *Papilio demodocus*, Esp.

Taken by Dunn on the Bahr al-Zarâfa; by the Swedes at Khartûm, where the Rothschild party found it abundant among lemon trees.

I saw but few at Khartûm in 1909; at the time of my second visit, however, it was quite common among limes (*Citrus limetta*).

Mr. H. H. King assured me that *demodocus* is found up the White Nile, but could give no particulars.

Selous took two at Ardeiba in the Southern Bahr al-Ghazâl. It occurs at Aden, also in Somâliland, and is found throughout tropical and South Africa.

70. *Papilio pylades*, Cramer.

Loat took a female at Gondokoro, noting it as "rare."

Selous took it commonly at Ardeiba in the Southern Bahr al-Ghazâl; Trimen (24.) notes that all Selous' specimens, though some of them are rather small, are of the typical West Coast form.

For the typical *pylades* Aurivillius (3. p. 21) gives Senegal to the White Nile, Northern Congo.

Family HESPERIIDAE

71. *Sarangesa eliminata*, Holland.

The Swedish expedition took two specimens, both males, on the White Nile, but the locality is not specified; Aurivillius suggests that perhaps *Cyclopides phidyle*, Walker [Entomologist, v, p. 56, 1870], may be this species.

Peel took it in Somâliland. It occurs also in British East Africa, Rhodesia and in Cape Colony.

Possibly this is identical with *S. tsava*, B.-Baker, a common insect at Port Sûdân.

72. *Gegenes nostradamus*, Fabricius.

Loat took three males and a female near Kâkâ [Lat. 10° 40' N.].

In 1912 I took one near Sôba station and two at Khartûm.

In 1909 I took one (a male) at Aswân; I had previously taken it in Northern India. Bennett took a female in Sokotra, and Yerbury met with it at Aden [form *karsana*, Moore]. It occurs in British East Africa; northwards it extends to Cyprus; westwards to Gibraltar; and eastwards to Afghânistân and the Panjâb. It is a dingy insect, and very inconspicuous, so that it might easily be overlooked.

73. *Parnara mathias*, Fabricius.

Loat took a male near Kâkâ.

In 1912 I took one at Tombê [Lat. 5° 43' N.] and another at Rejâf wooding station [Lat. 4° 50' N.].

Rothschild found it commonly at Cairo, and Yerbury took it freely at Aden.

This is a very common and widely-distributed species, but like the preceding it is inconspicuous and easily overlooked. It occurs in British East Africa, on the Zambesi and in Natal; it is found also in Cyprus and extends to India, Ceylon and the Philippines.

74. *Parnara fatuellus*, Hopffer.

This species was taken by Capt. Dunn on the Bahr al-Zarâfa, but I have no other records of it in that part of the world; it occurs in the Victoria Nyanza district, Portuguese East Africa, Rhodesia and Natal.

75. *Rhopalocampta forestan*, Cramer.

This fine Skipper was also taken by Capt. Dunn, but I have no other record.

Like the preceding this insect has a wide range, including Uganda, the Congo, British East Africa, Rhodesia, Natal, the Gambia and Sierra Leone.

A perusal of the above list leads to certain conclusions, which are made even more obvious by grouping the species in families and sub-families.

	Total Species found on White Nile.	Total Species found in S. Arabia.	Species common to both.
<i>Danainae</i> . . .	2	1	1
<i>Satyrinae</i> . . .	1	2	1
<i>Nymphalinae</i> . . .	10	8	7
<i>Acraeinae</i> . . .	5	0	0
<i>Lycaenidae</i> . . .	17	13	10
<i>Pierinae</i> . . .	33	19	16
<i>Papilioninae</i> . . .	2	1	1
<i>Hesperiidae</i> . . .	5	6	2
Total . . .	75	50	38

The Butterfly Fauna of the White Nile is a very poor one, comparable indeed, as far as numbers go, with that of the British Isles.

Several groups are very poorly represented, both as regards species and individuals, notably the *Satyrinae*, of which but a single specimen was found among several hundreds of butterflies sent home.

That typically African group, the *Acraeinae*, was represented by very few individuals; the same is true of the *Papilioninae* and the *Danainae*, while the *Nymphalinae* are not much more numerous.

The *Lycaenidae* contribute more species, but they are for the most part inconspicuous, and none of them strikingly common.

There are many species of *Pierinae*, and several of these are abundant, or at least common, so that when individuals are taken into consideration this group by far outnumbers all the others put together.

In the S. Sûdân, as everywhere, there are some favoured spots where butterflies are found in unusual numbers. One may spend an hour in such a spot among clouds of "Whites" and "Yellows" without catching sight of a Swallow-tail, a Nymphalid or a Skipper.

The impression left on the mind is that throughout the Anglo-Egyptian Sûdân, alike on the Red Sea coast and on the White Nile, from Khartûm right up to Rejâf, the beautiful, but puzzling genus *Teracolus* is dominant.

The most abundant and generally distributed species are *T. evarne* and *T. eupompe*, but several others—*T. दौरا*, *T. evagore*, *T. phisadia*, *T. halimede* and *T. protomedia*, are common enough where they occur, and it is indeed a beautiful and a bewildering sight to see these "orange-tips" and "crimson-tips," with here and there a "purple-tip" flying over the dead grass or the flowering shrubs.

That the Butterfly Fauna of the White Nile has a decidedly desert character was noticed long ago by Butler (9. p. 25) and by Dixey (12. p. 142). This is made very clear by a comparison with the fauna of S. Arabia, brought to our knowledge mainly by the labours of Col. Yerbury in Aden and its neighbourhood.

A glance at the preceding table shows that, as might have been expected, the South Arabian Fauna is even poorer than that of the White Nile, but—with the notable exception of the total absence of the great genus *Acraea*—the distribution between the families is very similar. It is very remarkable that out of the Arabian total of fifty species, no less than thirty-eight are found on the White Nile.*

Although Yerbury's operations were confined to a comparatively small area it may be assumed that his list is nearly complete, whereas mine is very far from such perfection. Collectors with more time at their disposal

* It is not possible when comparing lists to be certain that different authors mean the same things by the same names. But this difficulty has been minimised by the fact that neither Dr. Dixey nor Col. Yerbury are "splitters." My conclusions are mainly, though not entirely, founded upon the great Hope Collection, in which the *Pierinae* have been so admirably arranged by Dr. Dixey.

will without doubt add many species to my list, more especially among the less conspicuous *Lycaenidae* and *Hesperiidae*, and will give new localities to many species already recorded.

The following lists illustrate the relationship between the two faunas, and may, I hope, be instructive in other ways. The first (and longer) list gives all the butterflies for which I have records from Khartûm up to Ad-Duwêm; the four shorter lists give the *additional* species met with for each 2° of latitude as one ascends the river.

SPECIES RECORDED IN LATITUDES 16° N.—14° N.

(Khartûm to Ad-Duwêm inclusive.)

1. <i>D. chrysippus</i>	A	45. <i>T. chrysonome</i>	A
4. <i>P. cardui</i>	A	48. <i>T. protomedea</i>	A
5. <i>P. cebrene</i>	A	49. <i>T. halimede</i>	A
8. <i>H. misippus</i>	A	54. <i>T. eupompe</i>	A
19. <i>P. baeticus</i>	A	57. <i>T. दौरا</i>	
21. <i>T. theophrastus</i>	A	59. <i>T. ephyia</i>	
25. <i>C. eleusis</i>		60. <i>T. liagore</i>	A
27. <i>Z. lysimon</i>	A	65. <i>C. florella</i>	A
28. <i>C. trochilus</i>	A	68. <i>C. marnoana</i>	
30. <i>L. otacilia</i>		69. <i>P. demodocus</i>	
32. <i>A. ubaldus</i>	A	71. <i>S. eliminata</i> ? *	
39. <i>B. mesentina</i>	A	72. <i>P. nostradamus</i>	
41. <i>C. eulimene</i>			

ADDITIONAL SPECIES RECORDED IN LATITUDES
14° N.—12° N.

(S. of Ad-Duwêm to Gebel Ên.)

14. <i>A. acerata</i>		43. <i>T. phisadia</i>	N A
20. <i>L. bibulus</i>		51. <i>T. eris</i>	N
33. <i>D. livia</i>	N A	53. <i>T. phlegyas</i>	P
34. <i>V. antalus</i>	N	56. <i>T. evippe</i>	P A
35. <i>H. philippus</i>		61. <i>T. evarne</i>	P
36. <i>H. eriphia</i>	N A	62. <i>E. cleodora</i>	
37. <i>B. gidica</i>		64. <i>L. buquetii</i>	A
42. <i>T. calais</i>	N A	66. <i>T. senegalensis</i>	A

* It is not stated where the Swedish expedition came across this butterfly.

ADDITIONAL SPECIES RECORDED IN LATITUDES
12° N.—10° N.

(Renk to Melût inclusive.)

11. <i>B. ilithyia</i>	A	47. <i>T. amelia</i>	
17. <i>A. encedon</i>		50. <i>T. pleione</i>	N A
22. <i>T. telicanus</i>	N A	52. <i>T. hetaera</i>	
24. <i>C. cretosus</i>		58. <i>T. evagore</i>	P A
26. <i>C. malathana</i>	A	73. <i>P. mathias</i>	N A
38. <i>B. severina</i>	A		

ADDITIONAL SPECIES RECORDED IN LATITUDES
10° N.—8° N.

(Kôdôk to Hillet al-Nuwêr inclusive: mostly Sadd.)

2. <i>T. petiverana</i>		29. <i>L. amarah</i>	A
6. <i>P. clelia</i>	A	40. <i>P. venata</i>	
7. <i>P. boopis</i>		55. <i>T. achine</i>	P
12. <i>B. goetzius</i>	A	63. <i>E. leda</i>	
13. <i>A. phalantha</i>		67. <i>T. brigitta</i>	
16. <i>A. natalica</i>		74. <i>B. fatuellus</i>	
18. <i>A. abdera</i>		75. <i>R. forestan</i>	

ADDITIONAL SPECIES RECORDED SOUTH OF LAT. 8° N.

(Shambî to Rejâf: mostly above the Sadd.)

3. <i>Y. asterope</i>	N A	31. <i>A. jésous</i>	N A
9. <i>H. daedalus</i>	A	44. <i>T. castalis</i>	
10. <i>N. agatha</i>		46. <i>T. vesta</i>	
15. <i>A. terpsichore</i>		70. <i>P. pylades</i>	
23. <i>C. usemia</i>			

The letter A indicates that the species is recorded also for S. Arabia.

The letter N signifies that the species is known to occur north of Khartûm, and that therefore it may well be expected to occur further north than yet recorded.

The letter P signifies that the species was found by Petherick, and as the precise localities in which his captures were made are unknown, it is quite possible that he may have found the species further north.

As might have been expected it is seen that north of Kôdôk—roughly speaking north of the Sadd—the fauna

is decidedly more Arabian, or Desert, in character than it is to the south.

Again as might have been expected the great majority of the species are Ethiopian, that is to say peculiar to the Province made up of Africa, with the adjacent islands, and Southern Arabia. The species that extend beyond that Province are eighteen in number, viz. :—

2. *Ypthima asterope*. Syria.
4. *Pyrameis cardui*. Cosmopolitan.
8. *Hypolimnas misippus*. India, Ceylon, Malaya, etc.
11. *Byblia ilithyia*. India, Ceylon.
13. *Atella phalantha*. India, Ceylon, Malaya, China, Japan.
19. *Polyommatus baeticus*. Cosmopolitan.
21. *Tarucus theophrastus*. Persia, Balûchistân, India, Ceylon, Burma, S. Europe.
22. *Tarucus telicanus*. India, Ceylon, Burma, Java, China, Europe.
27. *Zizera lysimon*. S. Europe, W. Asia, India, Ceylon, Malaya, Australia.
30. *Chilades trochilus*. S.E. Europe, Central Asia, India, Malaya.
31. *Azonus jesous*. } Balûchistân, India, Ceylon, Burma.
32. *Azonus ubaldus*. }
39. *Belenois mesentina*. Persia, Afghanistân, India, Ceylon.
42. *Teracolus calais*. Persia, Sind, N.W. India.
43. *Teracolus phisadia*. Syria (Lebanon).
68. *Colias hyale*. Palaearectic Province.
72. *Gegenes nostradamus*. Gibraltar, Cyprus, Afghanistân, Panjâb.
73. *Parnara mathias*. Cyprus, India, Ceylon, Philippines.

There are a few species which may be said just to touch the northern fringe of our district in the neighbourhood of Khartûm.

Such are :—

25. *Catochrysops eleusis*.
30. *Lycaenesthes otacilia*.
41. *Calopieris eulimene*.
45. *Teracolus chrysonome*.
59. *Teracolus ephyia*.
68. *Colias marnoana*.

Of these *L. otacilia* is an East African and South

African species, and probably has a wider range up the river than has been yet recorded.

The other five are more Palaearctic in character, or are borderland species. *C. eulimene*, so far as is known, is confined to the Anglo-Egyptian Sûdân, and I know of only one example of *T. ephyia* taken outside that country. *Synchloë glauconome* has a wider range to the north, at Shendî it gets within sixty-five miles of Khartûm, but does not actually enter our district.

In like manner there are three butterflies which just attain the southern end of our district, viz. :—

23. *Castalius usemia*.

46. *Teracolus vesta*.

70. *Papilio pylades*.

These are all Central or South African forms.

Though well known to have a wider range outside our limits there are three species which, so far as actually recorded have a very restricted range on the White Nile :—

Teracolus halimede, 13° 22'—10° 40'.

Teracolus pleione, confined to Kâkâ, Lat. 10° 40', excepting so far as the locality of Petherick's specimens is unknown.

Teracolus phisadia, 13° 22'—10° 50', but presumably Capt. Dunn's specimens came from something like 2° further south.

The most northerly limit of the great genus *Acraea* would seem to be attained by *A. acerata* (f. *vinidia*) in Lat. 12° 37' N.

The sole species peculiar to the White Nile district would appear to be the little-known, and hitherto rare, *Pinacoptyx venata*.*

Any one dealing with the Butterflies of N.E. Africa must depend greatly on the magnificent work of Klug. The writer has had the good fortune to take all his *Pierinae*.

* While this paper was going through the press my attention was called by Commander J. J. Walker to the description by A. G. Butler [Ent. Mo. Mag., vol. ii, p. 169, 1866] and a good wood-cut of *Aphnaeus* (?) *marmoreus*, n. sp. The type, a female, was taken by Petherick on the White Nile, and would appear to be unique; it now stands in the National Collection next to the S. African *Stugeta bowkeri*, Trimen.

The Hon. N. C. Rothschild's captures on the R. Atbara derive especial interest from the fact that, since Klug's time, no collector has worked so near to Klug's locality—Ambukôl.

I have to thank alike draughtsman and printer for the admirable plate.

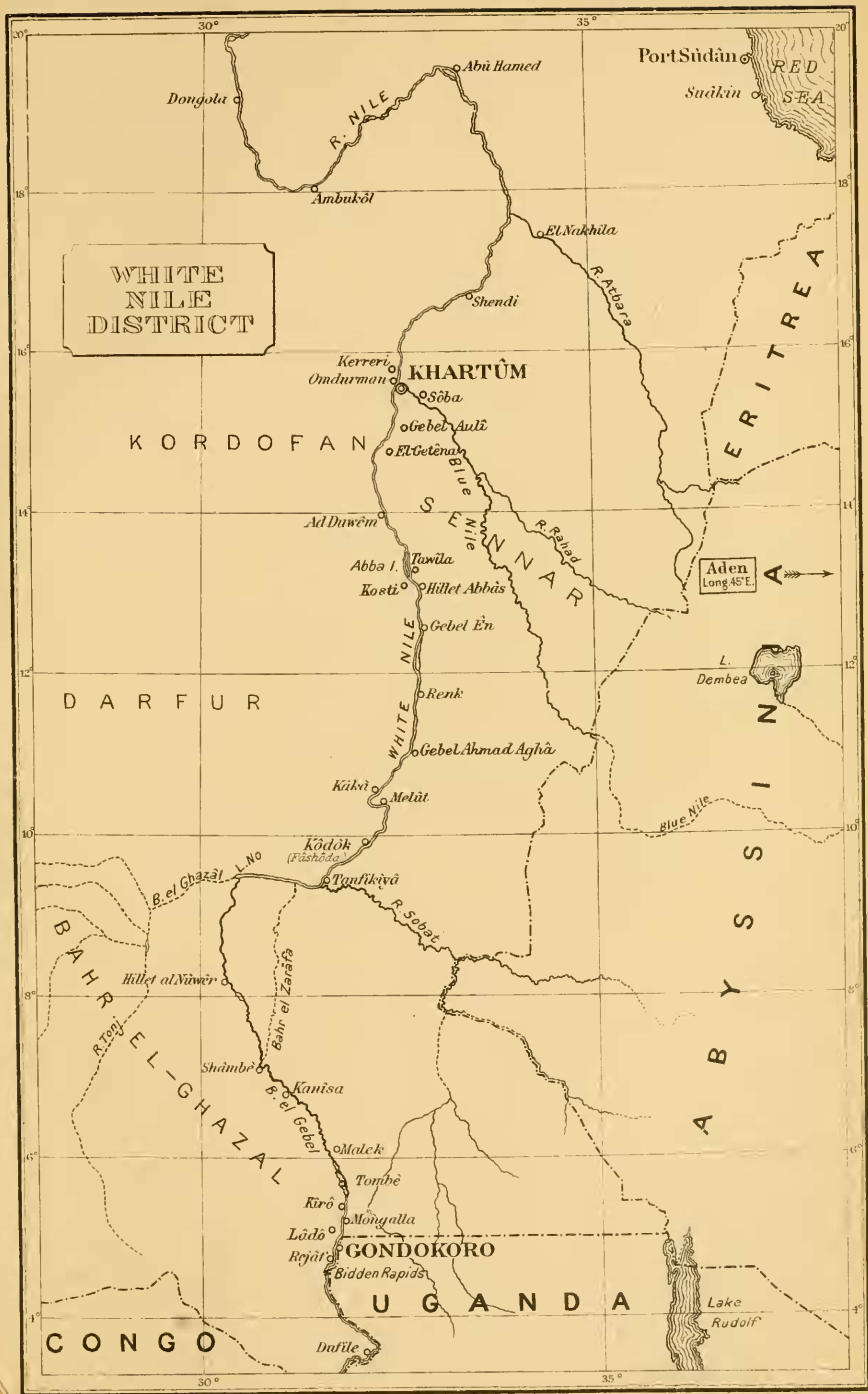
Col. J. W. Yerbury, R.A., and Mr. Roland Trimen, F.R.S., have kindly assisted me with valuable information, the latter having placed his MS. notes on Mr. F. C. Selous' captures in the spring of 1911 at my disposal.

Prof. E. B. Poulton, F.R.S., and his able assistants have, as always, been most kind and helpful.

Dr. F. A. Dixey, F.R.S., has allowed me to draw upon his unique knowledge of the *Pierinae* and helped to guide me through the mazes of the genus *Teracolus* and steered me clear of many pitfalls.

LOCALITIES MENTIONED.

	Lat. N.		Lat. N.
[Port Sûdân	19° 35']	Melût	10° 27'
[Suâkin	19° 8']	[Berbera(Somâliland)	10° 25']
Ambukôl	18° 4'	Kôdôk (Fâshôda)	9° 54'
El-Nakhîla	17° 25'	Lûl	9° 47'
Shendî	16° 42'	Wâw	9° 40'
Kerreri	15° 47'	Malakal	9° 35'
Kadarû	15° 46'	Tawfikîyâ	9° 25'
Khartûm	15° 37'	Dûlêb (R. Sobat)	9° 22'
Sôba	15° 32'	Khor Atâr	9° 20'
Ad-Duwêm	14° 0'	Lake Nô	9° 30'
Kawwah	13° 45'	Bahr al-Zarâfa	9° 25' - 7° 0'
Abba Island, " Mahdi's place "	13° 22'	Hillet al-Nuwêr	8° 13'
Tawîla	13° 16'	Shâmîbî	7° 0'
Kosti	13° 10'	Kamîsa	6° 50'
Kôz Abû Gûma	13° 8'	Bôr	6° 13'
Hillet Abbâs	13° 7'	Malêk	6° 7'
Masran Island	12° 45'	Tombê	5° 43'
[Aden	12° 45']	Kîrô	5° 22'
Gebel Ên	12° 37'	Mongalla	5° 12'
[Sokotra	12° 30']	Lâdô Wooding Stn.	5° 8'
Renk	11° 45'	Lâdô	5° 2'
Gebel Ahmad Aghâ	11° 0'	Gondokoro	4° 54'
Mashra Zarâfa	10° 50'	Rejâf Wooding Stn.	4° 50'
Kâkâ	10° 40'	Rejâf	4° 45'



**WHITE
NILE
DISTRICT**

K O R D O F A N

D A R F U R

B A H R E L - G H A Z A L

G O N D O K O R O

U G A N D A

C O N G O

Port Sūdān
Suakin

RED
SEA

Aden
Long 45° E

L. Dembea

Lake
Rudolf